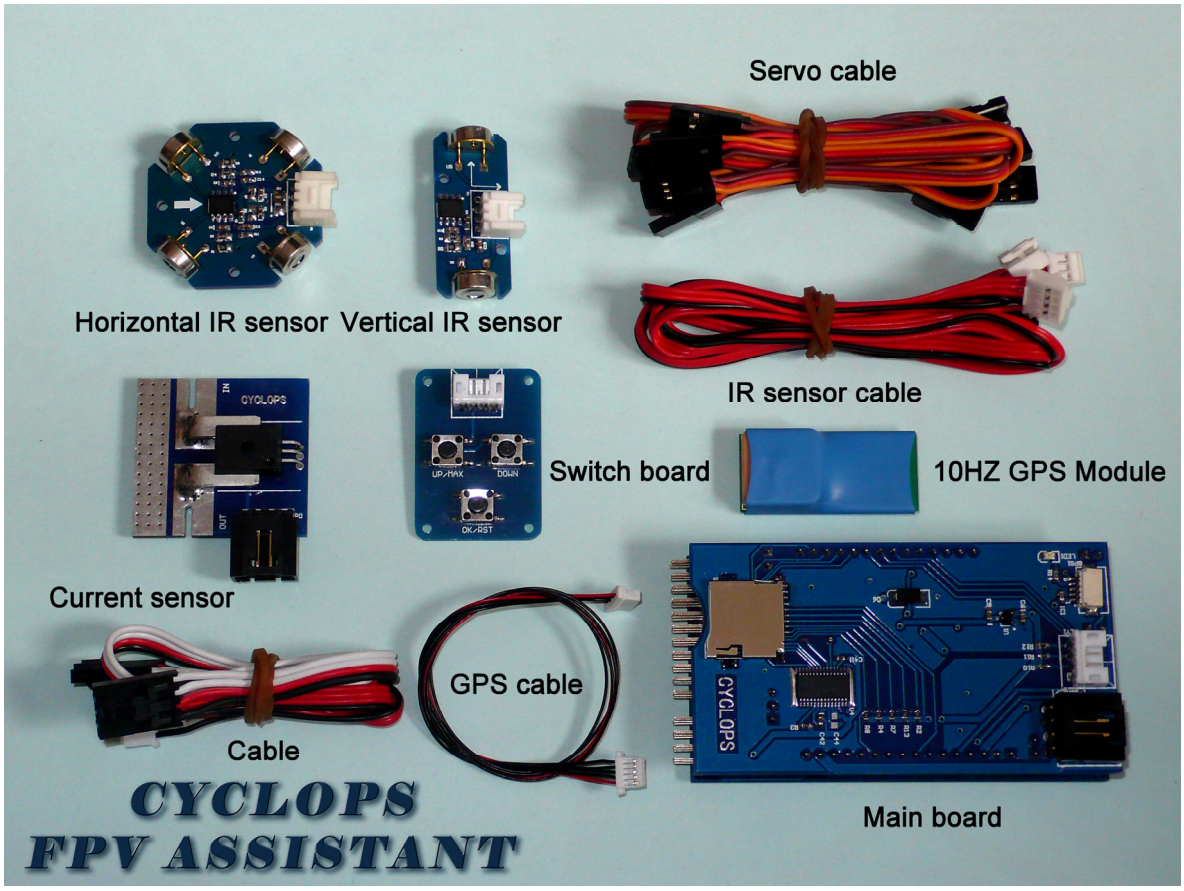
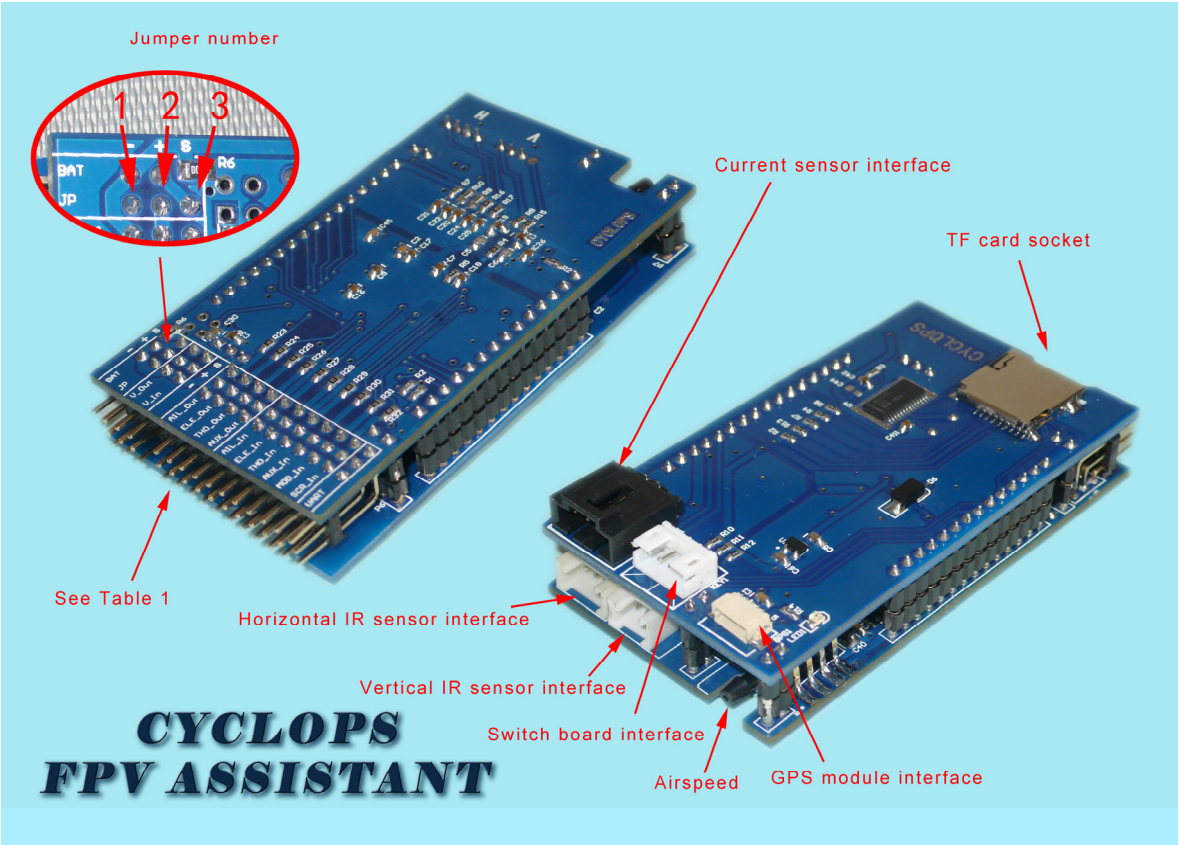
CYCLOPS FPV ASSISTANT V1.0 User's Manual (Beta Version)

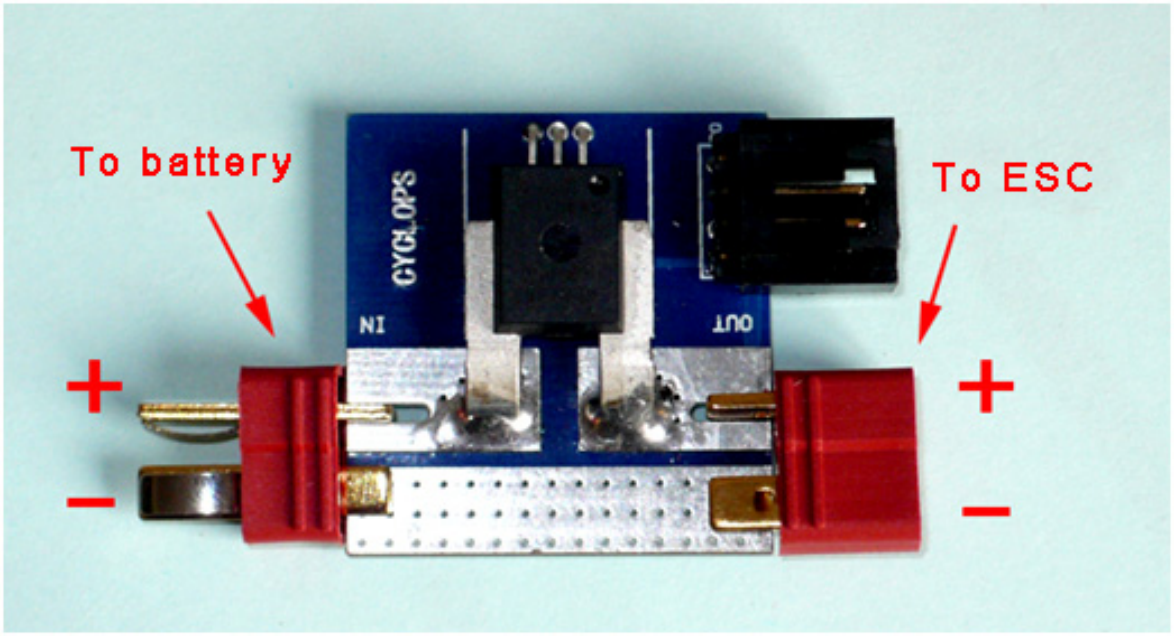
The product is an auxiliary piloting equipment with OSD, auto pilot functions for FPV lovers. The product has the advantages of small size, light weight, well-developed functions, and simplified operations.

Hardware configurations



Description of the pins





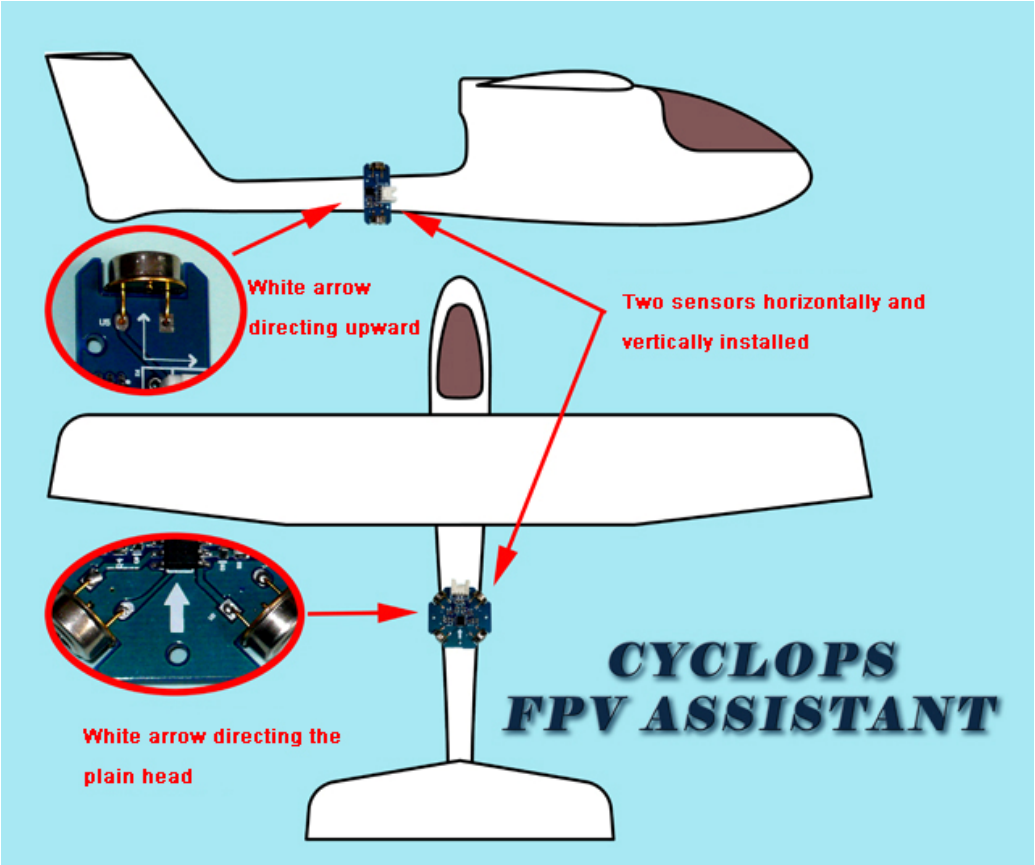
T connector should be purchased separately

Table 1

PCB indications	Functions	Equipment connected	Signal mode	Remarks
BAT	Main board battery	12V power or 3S lipo battery	DC	Working voltage 6-14V
JP	Jumper			If only the power is 12V or 3S Lipo battery, the main board can use the power battery. 1 and 2 short circuit to power main board by another battery, 2 and 3 short circuit to power the main board by power battery
V_OUT	Video output	Video frequency	NTSC/PAL	Automatic detection of video signal, power supply consistent with the main board voltage
V_IN	Video input	Camera	NTSC/PAL	Automatic detection of video signal, power supply consistent with the main board voltage
AUX_Out	Rudder output		PWM	
AIL_OUT	Aileron servo output	PWM	PWM	
ELE_Out	Elevator servo output	Elevator servo	PWM	
THO_Out	Throttle output	Speed regulator or throttle servo	PWM	
AIL_In	Aileron input	Receiver aileron channel	PWM	
ELE_In	Elevator input	Receiver elevator channel	PWM	
THO_In	Throttle input	Receiver throttle channel	PWM	
AUX_In	Rudder input	Receiver rudder channel	PWM	
MOD_In	Pilot mode shift	Receiver knob channel	PWM	Shift between manual control, PA, AUTOPILOT, RTH
SCR_In	OSD display switch	Receiver knob switch channel	PWM	

Cautions:

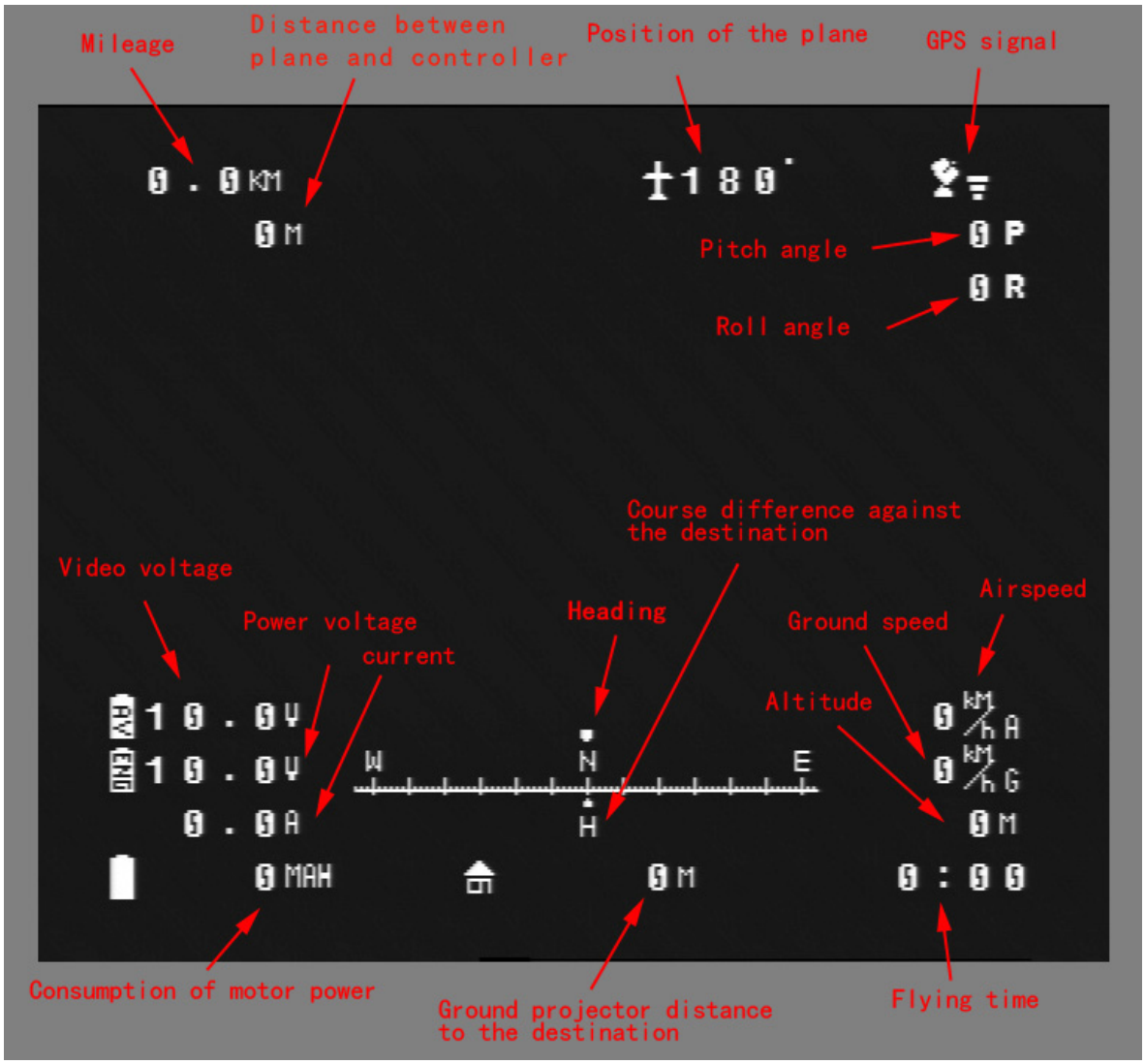
1. Never touch the pressure sensor with anything, keep it clean and free from explosion to light.
2. Never blow wind by mouth to the air speed indicator in case damage may occur.
3. Keep the circuit board away from electromagnetic field, such as video projector and remote controller protector.
4. Never touch the circuit board with metal in case short circuit may occur.
5. Keep the airspeed tube away from propeller movement range (at least 1.5 times of the propeller diameter to the fuselage) in case deviations may occur to the air speed indicator.
6. Please fit the infrared ray sensor to the plain as indicated in the following diagram.



Description of display

The main board indicator lamp flashes after power is connected. The following picture will appear when you insert TF card (Mini SD card). If there is not TF card, then it will display NO SD CARD FOUND and jump to startup picture automatically after 2 seconds.

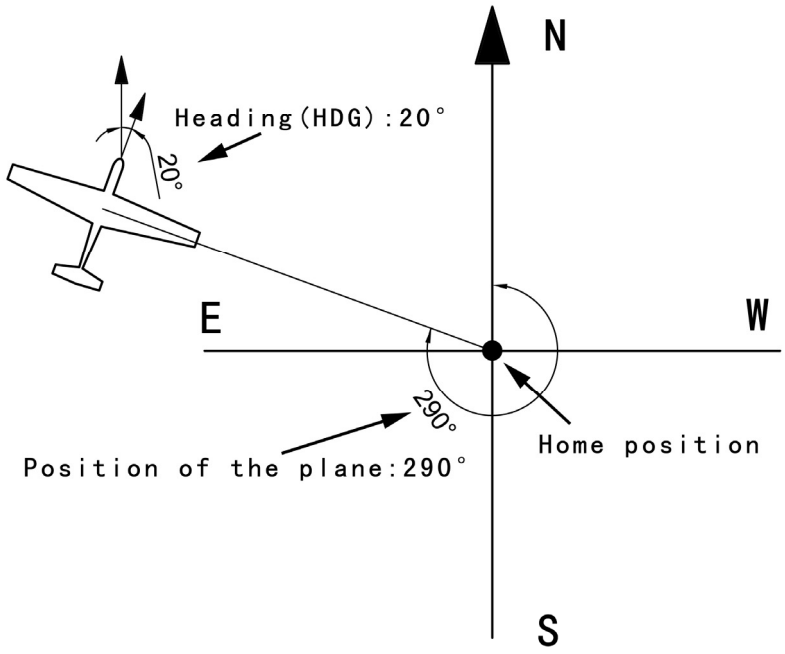
About 5 seconds later, the system will enter pilot display.

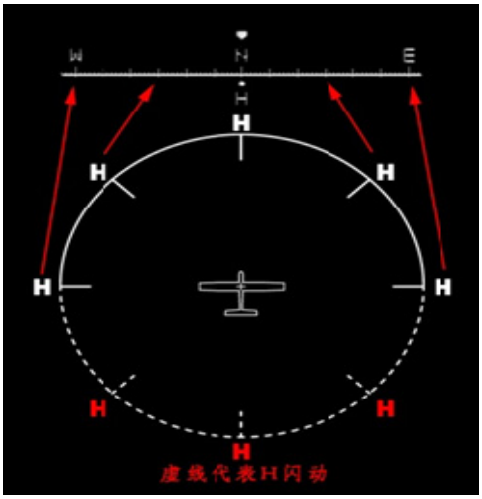


At this time, GPS starts searching the satellite signal. The signal intensity symbol at the upper-right corner refers to the number of the satellites detected. If the signal intensity symbol flashes, it means no satellite signal detected or the satellite signal date received by GPS is not reliable and cannot be used as location parameters. The searching lasts one to five minutes in case of adequate satellite signal and the time changes in different environment.

Cautions

1. Please press "RESET" to zero before taking off (The operation will zero altitude, distance, time, and power consumption).
2. The meaning of current azimuthal angle of the plane: The location of plane is based on the take-off as the base point, and the rotates from due north from 0 to 360 degree. For example, if the plane is at the southeast direction, the it will display 135.





Dotted line indicates the “H” is flashing

3. Position indication in RTH: H in the screen refers to the take-off position(A-G refer to destinations), when the take-off point is in front of the plane, then it displays H, when the take-off point is at the back of the plane, H will flash. If H is in the middle and does not flash, it means that the plane is travelling back to the take-off point. If H is in the middle and flashes, it means that the plane is deviating from the take-off point at 180 degree. Methods for RTH: H is displayed at the left side, turn left to travel back. If H is displayed at the right side, turn right to travel back.

Description of menu parameters setting

Press UP and DOWN to enter main menu setting.

SYSTEM CONFIGU SETTING DESCRIPTION

Options	Settings	Remarks
Page 1		
ATT DATA	If the attitude angle parameters displayed in the flying interface	If the environment is not suitable for flying, the attitude angle parameters in flying interface will flash.
BAT SCALE	Battery scale setting	If the power consumption reaches the value set during the flying, the battery scale symbol will flash.
RESET CURRENT	Clear current sensor	Clear the first application or after current sensor change.
RESET AIRSPEED	Clear air speed	Re-clear the air speed if the environment changes.
SERVO CENTER	Confirm the servo center.	You need to confirm the servo center after you change the model aeroplane. Please manually fly the plane and adjust the servo center..
REV	servo REV setting	Refer to Operation instruction 1
TRIM	Trim the infrared ray sensor	Refer to Operation instruction 2
Page 2		
CRUISE AIRSPEED	Set cruise airspeed.	Airspeed value (0-200Km/h) during auto pilot, when set as 0, the system will not control the airspeed.
SPEEDMAX	Maximal limit of airspeed	The air speed of the throttle in PA mode

LIM		
SPEEDLOW LIM	Lowest limit of airspeed	When the air speed of the model plane is lower than the set value, the system will not climb to avoid speed loss.
ELEVON	Set elevator aileron	Used to control aileron-type model plane. If choose Y, disable the mix control setting on the remote controller
ROLL	Roll control parameters	SEV:： ANG:maximal slope limit at roll
PITCH	Pitch control parameters	SEV:： ANG: maximal angle limit at pitch
RETURN	Return to the main menu	

Description of waypoints

Options	Settings	Remarks
Page 1, page 2		
DIS	Waypoint distance	The distance between the Waypoint and the home point, setting range: 0-5000meters
ANGLE	Waypoint angle	The angle between the line of waypoint and the home point with the due north, setting range: 0-359
ALT	Altitude of waypoint	Setting range 0-800 meters
RAD	Hovering radius	The hovering radius with the certain waypoint as the center, setting range: 0-500 meters
DIR	Hovering direction	L: counterclockwise; R: clockwise
ON/OFF	Whether to use the waypoint	
Page 3		
AUTOWAYPOINT	Auto waypoint shift	Y: Shift to the next waypoint after the plane reaches the waypoint, N: hover as set above the current waypoint. The operator needs to turn the knob manually to shift to the next waypoint.
MAXISCHG	Advance distance for waypoint shift	Setting range: 0-100 meters

NOTE: The system is in default value at leaving factory. The clients need only to set the red bold characters for auto pilot.

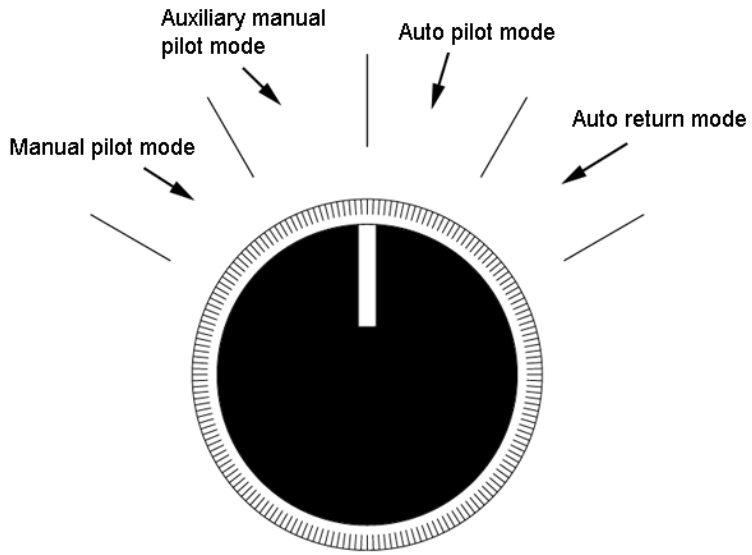
Operations

1. REV reversal setting: Cover the upper part (Z axis infrared ray) of the vertical infrared ray sensor (Z axis infrared ray) with a hand after proper connections confirmed, shift the flying mode to PA mode. Then cover the left side and front of the horizontal infrared ray sensor (XY axis infrared ray), observe whether the aileron is calibrated to the right side and the elevator servo is properly adjusted. If not, adjust AIL and ELE of REV options. If motor is used as the model plane throttle channel, the reversal is available for default value. The clients only need to set the Nor/REV of remote controller throttle channel.

2. TRIM infrared ray sensor trim setting: After infrared ray sensor is fitted on the model plane, put the plane higher than the head in the open space and observe the attitude angle parameters, if P parameters is negative number, such as -3, you need to adjust P parameters to -3. Repeat the operations and observe P parameters until it becomes 0. Observe R parameters with the methods as mentioned above to trim R parameters. You need only conduct the operations once after the infrared ray sensor is properly fitted unless the plane is changed or infrared ray attitude sensor is newly fitted.
3. If there is TF card (mini SD card) and power supply is connected, TF card will generate USERID.txt file, in which 30-digit ID number of the main board will be stored. Please keep the number properly for future maintenance and software updating.

Description of auto pilot

1. Please confirm that infrared ray sensor and airspeed pipe are properly installed and the infrared ray attitude sensor shall not bear large angle deviations from the plane.
2. We recommend the clients to use model plane with good stability.
3. Flying mode shift shall be connected to any knob ratio channel on the remote controller. Under different modes, the flying interface will display different information, PA (auxiliary manual pilot mode), AUTOPILOT (auto pilot mode), RTH (Auto return mode). At auto pilot mode, turn the knob AUTOPILOT to PA and quickly back to AUTOPILOT, the system will shift to the next waypoint.



4. We recommend to use remote controller with failure protection functions (F/S function). **You may set plane pilot mode shift channel fail protection as auto return pilot. In this case, the plane can automatically return in case of losing control.**
5. In PA mode, the system can keep the course and altitude automatically, and the screen will display to "LOCK" symbols as follows. If the operator controls aileron (direction steer) or elevator steer, the course or the altitude lock will be released. At this time, the system will automatically control the plane attitude according to the control amount of the operators. For example, if the aileron is in 100% amount, the plane will fly left (right) at 45 degree slope, if the elevator steer is in 100% amount, the plane will lift (lower) at 20 degree angle. Until the control lever returns to the neutral, the system will lock and

keep the course and altitude at the moment.

Additional functions

When TF card is inserted into the system and the system detects satellite signal, press for seconds UP button, and SD symbols will appear on the upper-right corner and flash. At this point, the card starts storing the system data. Press Reset and the card will restart storing the system data. If you want to end data storage, press UP button for 3 seconds and SD card symbol stops flashing, and you end data storage.

Description of software updating

CYCLOPS FPV ASSISTANT may be updated with TF (mini SD) card. We will issue the update programs on Internet. The clients may download the update program and copy it to the TF card.

1. Download Update.cyc
2. Copy Update.cyc to TF card and insert TF card into CYCLOPS FPV ASSISTANT main board
3. Press OK and start up the system, release the button when you see the following picture until the update is finished.

When update progression is 100%, the screen will display as follows for system checking.

After the checking, the screen will display as follows:

At this point, you finishes update. After update, the system will automatically run the new program. If the update fails, the screen will display as follows.

The following cases may result in update failure:

1. Update program is not available in TF card
2. Update program is corrupted
3. Update program does not match product ID.